Washington Latin

Calculus

Solve the following five word problems. Be sure to

1. draw a diagram of the problem,

2. find the right triangle,

3. decide what trig function is involved,

4. set up the equation,

5. solve for the unknown, and

6. calculate using trig values from your calculators.

A. You are flying a kite. Your loser father wants you to figure out how high the kite is flying. You have let out one whole ball of string, which is 130 feet of string. The string is at an angle of 67˚ to the ground. How high is the kite?

B.You want to figure out how wide a river is. Your friend, says “that’s easy. I’ll just swim across the river with a rope in my mouth. When I get to the other side, you pull the rope back and measure it.”

“OK,” so your friend swims across the river. But, there is a current and she is swept a good way downriver. She reaches the other side, you pull the rope back and it measures 347 meters. You note that the angle between the bank of the river that you are on, and the line of sight to your friend, is 42°. How wide is the river.

C. A telephone pole is 75 feet from your house. You are concerned that it might fall and hit the roof of your house. When you stand at the base of your house, the angle of elevation to the top of the telephone pole is 52°. If the telephone pole falls towards the house (and does not move from its base), will it hit your house? (10 points)

D. You are walking across a blistering dessert towards a mountain. You want to know how much farther it is to the mountain. You know that the mountain rises  miles above the dessert. You also are able to measure the height of elevation to the top of the mountain at 27º. How far away is the base of the mountain?

E. You are planning on eloping with your boy/girlfriend. You are going to his/her house to help him/her climb out the window of his/her apartment, which is on the fourth floor of his/her building. You know that it is 40 feet straight up to the base of his/her bedroom window. Your ladder is 45 feet long. The caution on your ladder says that it cannot be used safely if the angle of ladder to the ground is any greater than 57º. Is your ladder enough to get your honey safely out the window?